



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/667,046	09/21/2000	Steven A. Lytle	LYTLE 18	8375

7590 01/28/2003

Charles W Gaines  
Hitt Gaines & Boisbrun PC  
P O Box 832570  
Richardson, TX 75083

EXAMINER

VU, HUNG K

ART UNIT PAPER NUMBER

2811

DATE MAILED: 01/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/667,046

Applicant(s)

LYTLE, STEVEN A.

Examiner

Hung K. Vu

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 21, 24, 25 and 27-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 21, 24, 25 and 27-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 31 October 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Objections*

1. Claims 27 and 28 are objected to because of the following informalities:

In claim 27, lines 2 and 3, after "second" insert--interlevel--.

In claim 27, line 4, after "third" insert--interlevel--.

In claim 28, line 2, after "third" insert--interlevel--.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 27 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Independent claim 21 has already defined the limitations of a third interlevel dielectric layer with no landing pad between the second and third interlevel dielectric layers. The dependent claim 27 further includes a third interlevel dielectric (?) with landing pad between the second and third interlevel dielectric layers (?) which is redundant and contradicted.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 2811

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 21 and 24-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Huang (PN 6,127,260, of record).

Huang discloses, as shown in Figure 10, a semiconductor device comprising,

a first interconnect metal (13) located on or in a first interlevel dielectric layer (20);

a second interconnect metal (lower portion of 44) located on or in a second interlevel dielectric layer (31), the second interlevel dielectric layer located over the first interlevel dielectric layer;

a third interconnect metal (upper portion of 44) located on or in a third interlevel dielectric layer (37), the third interlevel dielectric layer located over the second dielectric layer;

a via (42a) located through the second and third interlevel dielectric layers and connecting the first and third interconnect metals, the via being void of a landing pad between the second and third interlevel dielectric layers.

Art Unit: 2811

With regard to Claim 24, Huang discloses the via is a passing metal via with no passing metal feature.

With regard to Claim 25, Huang discloses the device further including transistors wherein the first metal feature is located over the transistors and interconnects the transistors to form an operative integrated circuit.

4. Claims 21 and 24-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoo et al. (PN 6,177,340, of record).

Yoo et al. discloses, as shown in Figure 20, a semiconductor device comprising,

a first interconnect metal (9) located on or in a first interlevel dielectric layer (19);

a second interconnect metal (31) located on or in a second interlevel dielectric layer (23),  
the second interlevel dielectric layer located over the first interlevel dielectric layer;

a third interconnect metal (55) located on or in a third interlevel dielectric layer (49), the  
third interlevel dielectric layer located over the second dielectric layer;

a via (27,51) located through the second and third interlevel dielectric layers and  
connecting the first and third interconnect metals, the via being void of a landing pad between  
the second and third interlevel dielectric layers.

With regard to Claim 24, Yoo et al. discloses the via is a passing metal via with no passing metal feature.

Art Unit: 2811

With regard to Claim 25, Yoo et al. discloses the device further including transistors wherein the first metal feature is located over the transistors and interconnects the transistors to form an operative integrated circuit.

5. Claims 29-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Inohara et al. (PN 6,163,067, of record).

Inohara et al. discloses, as shown in Figures 12-14, a semiconductor device comprising,

- a first metal feature (25) located on a semiconductor surface;

- a first etch stop layer (13a) located on the first metal feature;

- a first interlevel dielectric layer (13b) located on the first etch stop layer;

- a second etch stop layer (14a) located on the first interlevel dielectric layer;

- a second interlevel dielectric layer (14b) located on the second etch stop layer;

- an unsegmented via (32) located through the first and second etch stop layers and

interlevel dielectric layers, the unsegmented via extending to and contacting the first metal feature and being void of a landing pad between the first and second interlevel dielectric layers; (Figure 21).

- a second metal feature (16b) located adjacent the unsegmented via and extending through the second interlevel dielectric layers and the second etch stop layer and terminating at the first interlevel dielectric layer;

- a dual damascene structure adjacent the second metal feature and having a damascene trench portion (16) extending through the second interlevel dielectric layer and the second etch stop layer and terminating at the first interlevel dielectric layer and further including a

Art Unit: 2811

damascene via portion (16c) extending through the first interlevel dielectric layer and the first etch stop layer and connecting the trench portion to the first metal feature.

With regard to Claim 30, Inohara et al. discloses the unsegmented via is a passing metal via with no passing metal feature.

### *Response to Arguments*

6. Applicant's arguments filed 10/31/02 have been fully considered but they are not persuasive.

It is argued, at page 5-6 of the Remarks, that Inohara does not disclose the multiple salicide layers 25 are the same metal feature or are even interconnected. This argument is not convincing because the claimed language does not clearly state whether the first metal feature is a continuous or interconnected layer. Therefore, Applicant's claim 30 does not distinguish over the Inohara reference.

6. Applicant's arguments with respect to claim 21 have been considered but are moot in view of the new ground(s) of rejection.

### *Conclusion*

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

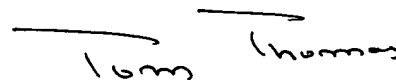
Art Unit: 2811

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung K. Vu whose telephone number is (703) 308-4079. The examiner can normally be reached on Mon-Thurs 7:00-4:30 and every other Friday 7:00-3:30, Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



TOM THOMAS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600

Vu

January 21, 2003